

**REMARKS**

This Amendment is being filed in response to the Office Action dated November 7, 2007. In view of these amendments and remarks this application should be allowed and the case passed to issue. No new matter is introduced by this amendment. Support for the amendments is found throughout the specification and claims as originally filed.

Claims 1 and 3-31 are pending this application. Claims 7-31 have been withdrawn pursuant to a restriction requirement. Claims 1 and 3-6 are rejected. Claims 1, 5, and 6 have been amended in this response. Claim 2 was previously canceled.

***Claim Objections***

Claims 5 and 6 were objected to under 37 C.F.R. § 1.75(c) as being of improper dependent form. This objection is traversed, and reconsideration and withdrawal thereof respectfully requested.

This objection is moot, as claims 5 and 6 have been rewritten in independent form.

***Claim Rejections Under 35 U.S.C. § 112***

Claims 5 and 6 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for allegedly not limiting the fuel cell system of claims 1, 3, and 4. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

This rejection is moot, as claims 5 and 6 have been rewritten in independent form.

***Claim Rejections Under 35 U.S.C. § 103***

Claims 1 and 3-6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Levy et al. (US 4,839,247) as evidenced by Ito et al. (US 6,926,982). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the present invention, as claimed, and the cited prior art.

An aspect of the present invention, per claim 1, is a fuel cell system which generates electricity by supplying fuel gas and oxidant gas to a fuel cell stack. The fuel cell stack comprises at least one unit cell including a membrane electrode assembly to generate electricity from a reaction between fuel gas and oxidant gas forming water as a by-product. The membrane electrode assembly comprises a polymer electrolyte membrane and two electrodes on both sides of and adjacent to the polymer electrolyte membrane. An anode is electrically connected to one of the two electrodes, and a cathode is electrically connected to the other of the two electrodes. A battery is electrically connected to the fuel cell stack in a parallel connection in which an anode of the battery is electrically connected to the anode of the fuel cell stack, and a cathode of the battery is electrically connected to the cathode of the fuel cell stack. The battery supplies current to the unit cell of the fuel cell stack through the parallel connection to allow the unit cell to electrolyze water therein. A controller is programmed to determine whether or not the fuel cell stack is generating electricity, and supply current to the unit cell of the fuel cell stack from the battery through the parallel connection to allow the unit cell to electrolyze water therein, when generation of electricity by the fuel cell stack is terminated.

The Examiner asserted that Levy et al. disclose a fuel cell system with a fuel cell and an electrolysis cell. The Examiner alleged that the electrolysis cell acts as a battery and is shown to be art recognized equivalents as evidenced by Ito et al.

Levy et al. and Ito et al., whether taken in combination, or taken alone, do not suggest the claimed fuel cell system, motor vehicle, and automobile. Levy et al. and Ito et al. do not suggest the fuel cell stack including a membrane electrode assembly to generate electricity comprising a polymer electrolyte membrane and two electrodes on both sides of and adjacent to the polymer

electrolyte membrane, and battery to supply current to the fuel cell stack to electrolyze water therein, as required by claims 1, 5, and 6.

Levy et al. teach the fuel cell (18) has a matrix (42) which holds an electrolyte sandwiched between electrode substrates forming a cathode and an anode (column 4, lines 1-5). However, the matrix of the fuel cell (18) is not supplied with current to electrolyze water therein. The electrolysis cell (20) also has a matrix (62) containing an electrolyte sandwiched between electrode substrates (column 4, lines 39-43). However, the matrix of the electrolysis cell (20) does not to generate electricity and supply it to unit cell to hydrolyze water. The Examiner asserted that the combination of the electrolysis cell (20) and the fuel cell (18) correspond to the unit cell of the present invention. However, as described above, the combination does not have a membrane electrode assembly to generate electricity and is not supplied with current to electrolyze water, as required by claims 1, 5, and 6.

The Examiner also asserted that Levy et al. disclose that the cathode of the fuel cell is connected to the cathode of the electrolysis cell through an oxygen manifold and the anode of the fuel cell is connected to the anode of the electrolysis cell through the hydrogen passage. However, there is no electrical connection, as required by claims 1, 5, and 6.

In addition, the Examiner opined that electrolysis cells can be used in place of the battery cells, relying on the Ito et al. (column 4, line 66 to column 5, line 3). However, though a battery for collecting a regenerative current is unnecessary due to the electrolysis cell, this does not mean that the electrolysis cell has all the functions of a battery or that electrolysis cells and batteries are art-recognized equivalents. There is simply no suggestion in Ito et al. that the electrolysis cell of Ito et al. **supplies electricity** for water electrolysis, as required by claims 1, 5, and 6. Further, there is no suggestion in Ito et al. that batteries and electrolysis cells are art-

recognized equivalents. In order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents. *In re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958).

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Levy et al. and Ito et al. of modifying the fuel cell system of Levy et al. so that the fuel cell stack includes a membrane electrode assembly to generate electricity comprising a polymer electrolyte membrane and two electrodes on both sides of and adjacent to the polymer electrolyte membrane, and battery to supply current to the fuel cell stack to electrolyze water therein, as required by claims 1, 5, and 6, nor does common sense dictate such modifications. The Examiner has not provided any evidence that there would be any obvious benefit in making such modifications to Levy et al. *See KSR Int'l Co. v. Teleflex, Inc.*, 500 U.S. \_\_\_\_ (No. 04-1350, April 30, 2007) at 20.

The only teaching of a fuel cell system comprising a fuel cell stack that includes a membrane electrode assembly to generate electricity comprising a polymer electrolyte membrane and two electrodes on both sides of and adjacent to the polymer electrolyte membrane, and battery to supply current to the fuel cell stack to electrolyze water therein is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the

**Application No.: 10/637,660**

reasonable expectation of success must not be based on Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The dependent claims are allowable for at least the same reasons as claim 1 and further distinguish the claimed fuel cell system.

In view of the above amendments and remarks, Applicant submits that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Bernard P. Codd  
Registration No. 46,429

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
Phone: 202.756.8000 BPC:kap  
Facsimile: 202.756.8087  
**Date: February 7, 2008**

**Please recognize our Customer No. 20277  
as our correspondence address.**